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### (54) Cleaning system and process for making and using same employing a highly viscous solvent

Reinigungssystem mit Verwendung eines hochviskosen Lösungsmittels sowie Verfahren zu dessen Herstellung und Gebrauch

Système de nettoyage et procédé pour sa réalisation et usage avec utilisation d'un solvant très visqueux

(84) Designated Contracting States:  
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**Description**

**[0001]** This invention relates to a cleaning system employing a strip of cleaning fabric wrapped around a core or a shaft to form a cleaning fabric supply roll. A highly viscous solvent is placed on the strip of cleaning fabric whereby said strip of cleaning fabric is functional for cleaning the cylinders of printing presses.

**[0002]** A wide variety of cleaning systems and apparatus employing the same to clean the cylinders of printing presses are known. Typical blanket cleaning systems and apparatus employing the same, including cleaning blankets and cleaning solutions, are exemplified by DE-A-3907611, to Munk which is directed to apparatus for cleaning a cylinder comprising a cleaning blanket covered in a dry soap powder which is wetted at point-of-use and by U.S. Patent No. 4,135,448 to Moestue which is directed to a mechanism for cleaning a cylinder that is provided with a cleaning cloth which is wetted with a cleaning fluid or solution prior to its encountering the pressure roller; U.S. Patent No. 4,934,391 to Futch et al. is directed to a composition for ink removal that exhibits a low vapor pressure and which is directed to a cleaning apparatus in which a cleaning cloth is dampened by a liquid; U.S. Patent No. 5,009,716 to Gerson is directed to a wash for removing ink comprising a low volatile organic compound; U.S. Patent No. 5,012,739 to Loos is directed to a washing device comprising a cleaning cloth dampened with a washing medium and U.S. Patent No. 5,069,128 to Hara is directed to a device for cleaning a cylinder of a printing machine comprising a cleaning cloth impregnated with a cleaning liquid.

**[0003]** In addition, U.S. Patent No. 5,104,567 to Staehr is directed to a liquid for cleaning ink from printing machines; U.S. Patent No. 5,125,342 to Hara is directed to a method for cleaning the cylinder of a printing machine; and U.S. Patent No. 5,143,639 to Krawack is directed to a cloth moistened with a low vapor pressure cleaning agent for removing ink; whereas U.S. Patent No. 5,188,754 to Weltman et al. is directed to a cloth soaked with a cleaning formula and U.S. Patent No. 5,194,173 to Folkard et al. is directed to a method for removing ink from printing machines. Still further, U.S. Patent No. 4,344,361 and 4,757,763 to MacPhee et al. is directed to automatic blanket cylinder cleaners provided with cleaner fabrics adapted to contact the blanket cylinders of printing presses. On the other hand, U.S. Patent No. 5,175,080 to Gasparini et al. is directed to a cloth supply system for the blanket cylinder for use in printing presses.

**[0004]** While the above-mentioned patents accomplish their purposes to a satisfactory extent, they still exhibit a variety of drawbacks. For example, they usually require apparatus, such as pumps, spray bars, manifold lines, valves, and the like as part of the automatic blanket cleaning systems for introducing the cleaning solvents or solutions to the cleaning fabric just prior to ac-

tual use.

**[0005]** U.S. Patent No. 5,368,157 to Gasparini et al., the present applicants, attempted to overcome these problems. That patent is directed to a pre-packaged, pre-soaked cleaning system for use with printing machines or the like to clean the cylinders of such machines and which comprises a pre-soaked fabric roll saturated to functional equilibrium with low volatility organic compound solvent and which is disposed around an elongated, cylindrical core and a sealed or a shrunken and sealed plastic sleeve disposed around and in contact with the fabric roll, whereby the pre-soaked saturated roll can be transported and stored vertically and/or horizontally until use without substantially disturbing the distribution of the solvent in the fabric roll and detrimentally effecting the cleaning ability of the fabric. The low volatility, organic compound solvent used is typically selected from vegetable oils and citrus oils and the like. These solvents have a low viscosity so that the solvents are Newtonian fluids.

**[0006]** While the invention disclosed in U.S. Patent No. 5,368,157 works well for its intended purpose, improvements have been discovered. When the patented product is placed in the vertical position, the solvent shifts slightly downward in the evacuated package. When the package is restored to the horizontal position, the solvent migrates back towards equilibrium in the roll. This migration is caused by air pockets in the fabric of the roll.

**[0007]** Improvements have been developed and include the use of a strip of cleaning fabric having a reduced air content as described in United States patent application serial no. 08/431,799, entitled CLEANING SYSTEM AND PROCESS FOR MAKING SAME EMPLOYING REDUCED AIR CLEANING FABRIC which corresponds to EP-A-0741034. An alternative improvement involves saturating the strip of cleaning fabric with a low volatility solvent on site or on the press, as described in United States Patent Application Serial No. 08/431,932 entitled SOAK ON SITE AND SOAK ON PRESS CLEANING SYSTEM AND METHOD OF USING SAME, which corresponds to EP-A-0741035. There still exists, however, a need for providing a cylinder cleaning system which improves upon the above-mentioned conditions and does not require the strip of cleaning fabric to be saturated with a low volatility, organic compound liquid solvent. The present invention fulfills such a need.

**[0008]** In accordance with the invention, there is provided a device for cleaning a cylinder of a printing press. The device includes a center piece, preferably either a shaft or a core. A strip of cleaning fabric is wrapped around the center piece to form a cleaning fabric supply roll. A highly viscous cleaning agent is present on the strip of cleaning fabric whereby, the strip of cleaning fabric is functional for cleaning cylinders of printing presses.

**[0009]** Preferably, the highly viscous cleaning agent

is in the form of a paste or a jell.

[0010] In a more specific embodiment, the device further includes a bag for enclosing the cleaning fabric supply roll.

[0011] In another more specific embodiment of the device, the highly viscous cleaning agent is present on substantially all of one side of the strip of cleaning fabric. Alternatively, the highly viscous cleaning agent may be placed on the strip of cleaning fabric in designs, such as horizontal stripes across the width of the strip of cleaning fabric or in diagonal stripes.

[0012] In a more specific embodiment of the invention, a reduced air content cleaning fabric is used.

[0013] In yet another more specific embodiment of the invention, the strip of cleaning fabric having the highly viscous cleaning agent placed upon it is positioned so that it may clean cylinders of printing presses.

[0014] The invention also includes a method of making a printing press cylinder cleaning system which includes wrapping a strip of cleaning fabric around a center piece to form a cleaning fabric supply roll and prior to wrapping, a highly viscous cleaning agent is applied on the strip of cleaning fabric so that the strip of cleaning fabric is functional for cleaning cylinders of printing presses.

[0015] In a more specific embodiment, the method also includes the step of unwinding the strip of cleaning fabric from a bulk roll prior to the application of the highly viscous cleaning agent.

[0016] In another more specific embodiment, the highly viscous cleaning agent is placed on substantially all of one side of the strip of cleaning fabric. Alternatively, only a portion of one side of the strip of cleaning fabric may be covered by the highly viscous cleaning agent. This partial covering may include horizontal stripes, diagonal stripes, a checkerboard pattern, or any other appropriate pattern.

[0017] In a preferred embodiment of the method, the highly viscous cleaning agent applied to the strip of cleaning fabric is either a jell or a paste. Additionally, it is preferable that the center piece that the strip of cleaning fabric is wrapped around is either a shaft or a core. Accordingly, the method further comprises calendering the strip of cleaning fabric prior to the application step.

[0018] The invention also includes a device for applying a highly viscous cleaning agent to a strip of cleaning fabric. This device includes a mounting assembly and a bulk roll center piece coupled to the mounting assembly to allow rotational movement of the bulk roll centre piece, the strip of cleaning fabric wound around said bulk roll centre piece. The device also includes an applicator means in contact with the strip of cleaning fabric and associated with a hopper to allow the cleaning agent to flow onto the applicator means and a cleaning fabric roll center piece rotatably coupled to the mounting assembly, the strip of cleaning fabric with the highly viscous cleaning agent wound around the centre piece.

[0019] Preferably, the device further comprises a cal-

endering means for reducing the thickness and increasing the length of the strip of cleaning fabric on the cleaning fabric supply roll on the centre piece without substantially increasing the diameter of the cleaning fabric supply roll.

[0020] In a more specific embodiment of the invention, the applicator means comprises at least a pair of rollers for applying said cleaning agent to said strip of cleaning fabric.

[0021] In a more specific embodiment of the device, the cleaning fabric supply roll is either a shaft or a core.

[0022] Preferably, the highly viscous agent is either a jell or a paste.

[0023] In a more specific embodiment, the device further comprises a controller means for controlling the applicator means to apply said highly viscous cleaning agent in noncontiguous stripes on the strip of cleaning fabric.

[0024] Preferably, the noncontiguous stripes extend substantially horizontally across at least a portion of the entire width of said strip of cleaning fabric.

[0025] In a more specific embodiment, the device further comprises a controller means for controlling said applicator means to apply said highly viscous cleaning agent in diagonal stripes on said strip of cleaning fabric.

[0026] Accordingly, the highly viscous cleaning agent is applied to substantially all of one side of said strip of cleaning fabric.

[0027] In a more specific embodiment, the applicator means comprises at least one roller in contact with the strip of cleaning fabric and a means for storing the highly viscous cleaning agent and for dispensing said highly viscous cleaning agent to at least one roller.

[0028] An alternate embodiment of the invention embodied in an assembly for use in a printing press cylinder cleaning system comprising a cleaning fabric supply roll comprising a strip of cleaning fabric wrapped around a center piece. A fabric placer operatively associated with the strip of cleaning fabric to place the strip of cleaning fabric in contact with the cylinder. A highly viscous cleaning agent is stored in a hopper and dispensed through the hopper. At least one roller is in contact with the strip of a cleaning fabric and associated with the hopper to allow the highly viscous cleaning agent to flow through

[0029] the dispenser and onto at least one roller and then onto the strip of cleaning fabric.

[0030] In a preferred embodiment, the highly viscous cleaning agent applied to the strip of cleaning fabric is either a jell or a paste.

[0031] It will be appreciated by those skilled in the art that the foregoing summary of the invention and the following detailed description are merely exemplary and explanatory of the present invention, but are not intended to be restrictive thereof or limiting of the advantages

[0032] which can be achieved by the invention or various combinations thereof. The accompanying drawings referred to herein and constituting in part hereof, illustrate preferred embodiments of the invention and, together with

th detailed description, serve to explain the principles of th invention.

[0031] In order to understand the inv ntion more fully, reference is dir ct d to the accompanying drawings, which is to be taken in conjunction with the following de-  
scription of th invention and in which

FIG. 1A is a lateral, sectional, elevational view of a cleaning fabric supply roll formed around a core;  
FIG. 1B is a lateral, sectional, elevational view of a cleaning fabric supply roll formed around a shaft;  
FIG. 2A is a view of a strip of cleaning fabric substantially covered with a highly viscous cleaning agent;

FIG. 2B is a view of a strip of cleaning fabric wherein the highly viscous cleaning agent is placed across the width of the strip of cleaning fabric in horizontal noncontiguous stripes;

FIG. 2C is a view of a strip of cleaning fabric wherein the highly viscous cleaning agent is placed across the width of the strip of cleaning fabric in diagonal noncontiguous stripes across the width of the strip of cleaning fabric;

FIG. 2D is a view of a strip of cleaning fabric wherein the highly viscous cleaning agent is placed on the strip of cleaning fabric in a checkerboard pattern;  
FIG. 2E is a view of a strip of cleaning fabric wherein the highly viscous cleaning agent is placed on the strip of cleaning fabric in a polka dot pattern;  
FIG. 2F is a view of s strip of cleaning fabric wherein the highly viscous cleaning agent is placed on the strip of cleaning fabric in alternating diagonal stripes;

FIG. 3 is a partial cross-sectional view of a cylinder to be cleaned and a soaked on site cleaning system according to the present invention;

FIG. 4 is a cross-sectional view of a highly viscous cleaning agent application system;

FIG. 5 is a cross-sectional view of an alternate em-  
bodyment of a highly viscous cleaning agent appli-  
cation system utilizing an application roller;

FIG. 6 is a cross-sectional view of an on press highly viscous cleaning agent application system;

FIG. 7 is a cross-sectional view of an alternate em-  
bodyment of an on press highly viscous cleaning agent application system utilizing an application roller; and

FIG. 8 is a flat view of a strip of cleaning fabric showing a possible size of a dispenser portion of a clean-  
ing agent application assembly in relation to the strip of cleaning fabric.

[0032] Referring now to FIGS. 1A and 1B, a cleaning fabric supply roll 10 used with the present invention is shown. A strip of cleaning fabric 13 is wrapped around a center piece. The center piec may b , but is not lim-  
ited, to a core 11 or a shaft 15. One embodiment of cleaning fabric supply roll 10, shown in FIG. 1A, com-

prises an elongated core 11 made from, for example, r relatively heavy cardboard of sufficient strength so that it can support thereon a strip of cleaning fabric 13. Altemativ ly, if d sir d, the core 11 can b made from any oth rsuitabl material including, but not limited to, plastic or metal, such as steel, aluminum, and the like. Cor 11 preferably has open ends to allow installation on an appropriate cylinder cleaning apparatus. Preferably, core 11 is completely hollow to allow a shaft, rod, or the like 15 to be inserted within the core 11 to provide in-  
stallation in the cylinder cleaning apparatus. In such an embodiment, cleaning fabric supply roll 10 comprises core 11 and strip of cleaning fabric 13. In an alternate embodiment shown in Figure 1B, cleaning fabric supply

roll 10 is formed by winding the strip of cleaning fabric 13 directly around shaft 15.

[0033] Preferably, the core 11 and/or shaft 15 is cylind-  
rical in shape. However, the core 11 and/or shaft 15  
may be any other appropriate shape, such as having 3,  
4, 5, or 6 sides or an oval. Such shapes are described  
in EP-A-0741036.

[0034] The strip of cleaning fabric 11 from which the cleaning fabric supply roll 10 is made may vary widely. For example, it may be made of paper, cloth, film, a mixture of wood pulp and polyester, such as DuPont SON-TARA (TM), or any other suitable material. In those cas-  
es where a cloth fabric is employed, it may be woven or non-woven cloth fabric made of synthetic or natural fibers or mixtures of the same. Exemplative, but not limit-  
ative, of suitable synthetic fibers which may be used in the cloth fabrics are polyester fibers, rayon fibers, nylon fibers, and acrylic fibers and the like. Exemplative, but not limitative, of the natural fibers which may be em-  
ployed are cotton fibers, wood pulp fibre, hemp fibers and the like.

[0035] In those cases where paper is employed as the fabric material, paper fabrics made from wood pulp modified chemically in accordance with paper manufac-  
turing technology are suitable. It is preferred that the fabric employed by one which has a caliper thickness in a range from about 0.08mm (0.003 inches) to about 0.08mm (0.030 inches), and preferably in a range from about 0.2mm (0.006 inches) to about 0.5mm (0.020 inches).

[0036] In general, woven and non-woven fabrics suit-  
able for use in carrying out the practice of the invention have a basic weight in a range of from about 51g<sup>m</sup><sup>-2</sup> (1.5 ounces per square yard) to about 200g<sup>m</sup><sup>-2</sup> (6.0 ounces per square yard), a caliper thickness in the range mentioned above, a tensile strength in the longitudinal (machine) direction in a range of from about 3500 Nm<sup>-1</sup> (20 lbs. per inch) to about 3500 Nm<sup>-1</sup> (200 lbs. per inch) and in a width (cross) direction in a range from about 2600 Nm<sup>-1</sup> (15 lbs. per inch) to about 2200 Nm<sup>-1</sup> (125 lbs. per inch).

[0037] When paper is employed as a cleaning fabric in the syst m of this inv ntion, it preferably has a basis weight in a rang e of from about 18kg (401bs.) to about

41kg (90 lbs.), a caliper thickness in a range of from about 0.08mm (0.003 inches) to about 2.5mm (0.10 inches), a tensile strength in the longitudinal (machine) direction in a range of from about  $3500 \text{ Nm}^{-1}$  (20 lbs. per inch) to about  $1400 \text{ Nm}^{-1}$  (80 lbs. per inch) and in the width (cross) direction in a range of from about  $2600 \text{ Nm}^{-1}$  (15 lbs. per inch) to about  $8800 \text{ Nm}^{-1}$  (50 lbs. per inch), and a stretch ability in a range of from about 1.0 percent to about 6.0 percent all determined by routine testing methods.

[0038] In order for the cleaning fabric supply roll 10 to be used to clean the cylinder, a highly viscous cleaning agent 20 must be placed on the strip of cleaning fabric 13 so that the strip of cleaning fabric 13 is functional for cleaning the cylinder 100. It is to be understood that "functional for cleaning" the cylinder 100 means that the strip of cleaning fabric 13 has sufficient highly viscous cleaning agent 20 on it that it imparts efficient cleaning ability to the fabric to clean cylinders of an apparatus, such as printing machinery.

[0039] A highly viscous cleaning agent is a cleaning agent being sufficiently viscous as to be a Non-Newtonian fluid. Any highly viscous cleaning agent capable of cleaning a cylinder of a printing press may be used. Alternatively, a low viscosity cleaning agent for purposes of this application is a cleaning agent which is a Newtonian fluid.

[0040] A suitable highly viscous cleaning agent may be made by taking a low volatility, organic compound solvent described in United States Patent No. 5,368,157 to Gasparri et al. entitled "PRE-PACKAGED, PRESOAKED CLEANING SYSTEM AND METHOD FOR MAKING THE SAME", and adding a viscosity adding additive, such as polyethylene glycol, until a highly viscous state is achieved. Preferably, this results in a highly viscous cleaning agent which is either a paste or a jell. Any other suitable viscosity adding additive can be used to create a highly viscous cleaning agent.

[0041] In an alternate embodiment of the highly viscous cleaning agent 20, it is preferred that water and a surfactant be added. The advantage of water is to clean paper coating and powder. Powder, usually starch, is used in two-sided offset printing to prevent pages from sticking to the other when they are placed on top of each other. To produce such a highly viscous cleaning agent, water is mixed with a surfactant. The water/surfactant mixture is then mixed with a low volatility organic compound solvent and a viscosity adding additive. The combined mixture is then emulsified, preferably by using a homogenizer or an ultra-sonic mixer. The end product should be stable enough to keep water for several months without separation of the water and the solvent. In an alternate embodiment, the surfactant and viscosity adding agent may be a single chemical, such as polyethylene glycol. This simplifies the procedure for making the highly viscous cleaning agent to, for example, mixing water, polyethylene glycol, and a low volatility organic compound solvent and emulsifying the mixture.

[0042] It is understood that any suitable additive may be used instead of water to form the cleaning agent. The additive replacing and having the same cleaning effect as emulsified and retained water.

[0043] The low volatility organic compound solvents described above vary widely and generally it would include at least one low volatility organic compound solvent which does not readily evaporate, as well as mixtures of the same with similar low volatile organic compound solvents or with normally volatile organic compound solvents. Exemplative, but not limitative, of suitable solvent materials of this type are organic compound solvents selected from vegetable oils and citrus oils and the like.

[0044] Once the highly viscous cleaning agent 20 is obtained, it must be placed on the strip of cleaning fabric 13. Many patterns can be used. For example, as shown in FIG. 2A, the highly viscous cleaning agent 20 can be placed on all or substantially all of one side of the strip of cleaning fabric 13. Alternatively, other patterns can be used in which less highly viscous cleaning agent 20 is used in order to reduce cost. Examples are shown in FIG. 2B, substantially horizontal non-contiguous stripes of highly viscous cleaning agent 20 across the width of

the strip of cleaning fabric 13; FIG. 2C, substantially diagonal stripes of the highly viscous cleaning agent 20 across the strip of cleaning fabric 13; FIG. 2D, the highly viscous cleaning agent 20 placed on the strip of cleaning fabric 13 in a checkerboard pattern; and FIG. 2E, the highly viscous cleaning agent 20 placed on the strip of cleaning fabric 13 in a polka dot pattern.

[0045] If desired, a bag or another container 17 may be placed around the cleaning fabric supply roll 10. An advantage of using a highly viscous cleaning agent instead of the solvents described in United States Patent No. 5,368,157 is that even without a vacuum, the distribution of the highly viscous cleaning agent will remain intact and there will not be a significant change of the center of gravity of the cleaning fabric supply roll during storage. While vacuum storage is not required, it could be used to store the cleaning fabric supply roll.

[0046] Many methods exist for applying highly viscous cleaning agent 20 to the strip of cleaning fabric 13. In the simplest embodiment, highly viscous cleaning agent 20 is manually placed on the strip of cleaning fabric 13, such as by using a brush dipped into highly viscous cleaning agent 20.

[0047] An alternative embodiment of a method of presoaking a strip of cleaning fabric on site is shown in FIG. 4. A strip of cleaning fabric 13 is initially wound around a center piece 35, preferably a shaft or core, to form bulk roll 30. Bulk roll 30 may be rotatably mounted to a roll forming assembly. The amount of fabric on bulk roll 30 may be sufficient to form multiple cleaning fabric rolls 10. A portion of the strip of cleaning fabric 13 is unwound from bulk roll 30. If desired, at least a pair of calendaring rollers 40 may be used to calendar the strip of cleaning fabric 13. The at least a pair of calendaring

rollers 40 compress the strip of cleaning fabric 13. Preferably, but not necessarily, the temperature of the at least a pair of rollers 40 is hotter than room temperature. Alternatively, the temperature of the at least a pair of rollers 40 is at about ambient temperature or less than ambient temperature. It has been found that the wettability and the distribution of the cleaning agent is very good in the calendarized fabric.

[0048] A surprising and unexpected result of the calendaring process is that the length of fabric is increased while not increasing the diameter of the cleaning fabric supply roll 10. This provides an important advantage because cleaners are designed to accept fabric rolls of up to a certain diameter. For example, one of the assignor's automatic blanket cleaners will only accept a cleaning fabric roll having a diameter of about 70mm (2.75 inches). Because of this extra length, a fabric roll of calendarized cloth will be usable for more washes than a regular fabric roll of the same fabric having the same diameter. This has two advantages. First, the cost per wash will be reduced. Second, the pressmen need not change a roll of cleaning fabric as often since there are more washes per roll of cloth. This will allow for the press to be more often.

[0049] The amount of increase in the length of cloth due to calendaring is dependent on the fabric used and the amount of calendaring. For example when the DuPont SONTARA (TM) cloth having a thickness of about 0.30mm (.012 inches) and a length of about 11m (12 yards) is placed about a core, having a diameter of about 38mm (1.5 inches), the fabric roll has a diameter of 70mm (2.75 inches). After being calendared the cloth has a thickness of about 0.22mm (0.0085 inches) and a length of about 15m (16 yards) and still has a diameter of about 70mm (2.75 inches) when placed on the same core. Thus, in this situation, calendaring results in an about 25% to about 30% increase in the length of the fabric without increasing the diameter of cleaning fabric supply roll 10. Depending on the type of fabric and amount of calendaring, results may range from about a 10% increase to about a 50% increase.

[0050] Calendaring fabric and its advantages are discussed in more detail in the United States Patent Application by C. Robert Gasparrini and Walter H. Cano entitled "CLEANING SYSTEM AND PROCESS FOR MAKING SAME EMPLOYING REDUCED AIR CLEANING FABRIC" filed May 1, 1995 which corresponds to our EP-A-0741034.

[0051] A cleaning agent application system 50 is used to apply a measured amount of highly viscous cleaning agent 20 to the strip of cleaning fabric 13. A hopper or container 52 is used to store cleaning agent 20. Hopper 52 has a hole, dispenser, or applicator 54. The highly viscous cleaning agent is removed from hopper 52 through hole, dispenser or applicator 54 onto strip of cleaning fabric 13. As shown, cleaning agent application system 50 also comprises a rotating roller 56 to hold the strip of cleaning fabric 13 in place as the highly viscous

cleaning agent 20 is applied to the strip of cleaning fabric 13. While it is preferable to use a rotating roller 56, any other appropriate device, such as a non-rotating support member preferably having a low coefficient of friction, may be used. A roll 760, or any other appropriate device, may be used, if necessary, to change the direction the strip of cleaning fabric 13 is moving in through the assembly. An example of an alternate appropriate device is a curved piece of metal or plastic. The strip of

cleaning fabric 13 with highly viscous cleaning agent 20 is then wound around a core, shaft or any other appropriate central piece to form a cleaning fabric supply roll 10. When a cleaning fabric supply roll 10 of an appropriate diameter is formed, the strip of cleaning fabric 13 is cut or torn, cleaning fabric supply roll 10 is removed, and a new shaft or core is used to form another cleaning fabric supply roll.

[0052] In the above described system, the winding of the strip of cleaning fabric 13 into a cleaning fabric supply roll 10 may cause the strip of cleaning fabric 13 to move through at least a pair of calendaring rollers 40 (if used) followed by a cleaning agent application system 56.

[0053] The cleaning agent application system 50 including all its elements, calendaring rollers 40, and cleaning fabric supply roll 10 may all be attached to a roll forming assembly.

[0054] A system for applying a highly viscous cleaning agent 20 to a strip of cleaning fabric 13 using an alternate cleaning agent application system 70 is shown in FIG. 5. A hopper or container 72 having a hole or dispenser 74 is used to store the highly viscous cleaning agent 20. The highly viscous cleaning agent 20 is removed from the hopper 72 through hole or dispenser 74 and placed on applicator roller 78, which is associated with the hopper 72 such that cleaning agent will flow onto applicator roller 78. The applicator roller 78 is then used to apply the highly viscous cleaning agent 20 to the strip of cleaning fabric 13. As with the previously described embodiment, a rotating roller 76 or other appropriate supporting member is used to support the strip of cleaning fabric 13 while applicator roller 78 is used to apply the highly viscous cleaning agent 20.

[0055] It should be noted that the embodiments shown in figures 4 and 5 do not need to have rolls 40 installed.

[0056] After having the highly viscous cleaning agent 20 applied to the strip of cleaning fabric 13 so that the strip of cleaning fabric 13 is functional for cleaning cylinders of printing presses, the cleaning fabric supply roll 10 having a strip of cleaning fabric 13 is then placed on a printing press having a cylinder 100 to be cleaned.

[0057] The printing press further includes a means for properly positioning the cleaning fabric to allow cleaning of the cylinder 100. Several ways exist for this result to be achieved. For example, the cleaning fabric 13 may be positioned so that it is adjacent the cylinder 100 to be cleaned. In another example, the cleaning fabric 13

may be adjacent to and operatively associated with the cylinder 100 to be cleaned. In yet another possible embodiment, the cleaning fabric 13 is operatively associated with the cylinder 100 to allow cleaning the cylinder 100 as the fabric 13 is fed past the cylinder 100. One possible arrangement is shown in Fig. 3. The person of ordinary skill in the art will be aware of many other configurations that will work for the invention's intended purpose without undue experimentation. These examples are merely exemplary and are not meant to limit how the invention may be used.

[0058] An alternate method for applying the highly viscous cleaning agent 20 to the strip of cleaning fabric 13 involves using an assembly 1, as shown in FIG. 6, which is mounted on a printing press (not shown) to prepare a strip of cleaning fabric 13 to clean a cylinder 100. A mounting assembly 80 is affixed to the printing and supports the assembly 1. Mounting assembly 80 may be a unitary structure. Alternatively, mounting assembly 80 may comprise several discrete pieces which are individually used to attach elements of the assembly 1 to the printing press. In yet a third embodiment, the mounting assembly 80 comprises those elements of a printing press which support elements of the assembly 1.

[0059] Cleaning fabric supply roll 10 is preferably rotatably mounted to mounting assembly 1. The strip of cleaning fabric 13 is at least partially removed from the cleaning cloth supply roll 10. A cleaning agent application system 50 is used to apply a measured amount of highly viscous cleaning agent 20 to the strip of cleaning fabric 13. This cleaning agent application system 50 may be the same as that described above regarding FIG. 4. Alternatively, as shown in FIG. 7, an alternate cleaning agent application system 70, such as the one described above regarding the system shown in FIG. 5, may be used. Alternatively, any other application system which applies sufficient amount of highly viscous cleaning agent 20 to the strip of cleaning fabric 13 so that the strip of cleaning fabric 13 is functional for cleaning the cylinder 100 of the printing press.

[0060] Additionally, a controller means can be attached to any cleaning agent application system, such as cleaning agent application system 50 or alternate cleaning agent application system 70, used either with an assembly on a printing press (such as shown in FIGS. 6 and 7) or an off press assembly (such as shown in FIGS. 4 and 5). This controller means is used to control the cleaning agent application assembly to place the highly viscous cleaning agent 20 on the strip of cleaning fabric 13 in patterns, such as those shown in FIGS. 2B-2E. This can be achieved in many ways. For example, controller means can act to open and/or close valves to limit the cleaning agent application system from dispensing highly viscous cleaning agent 20 to the strip of cleaning fabric 13. Alternatively, the controller means may act to move the cleaning agent application assembly so that it is not always in contact with the strip of cleaning fabric 13. Such a controller means might create

a pattern such as is shown in FIG. 2B. Alternatively, if the cleaning agent application assembly dispenses the highly viscous cleaning agent in segments less than the width of the strip of the cleaning fabric 13, such as shown in FIG. 8 (which shows a dispenser portion 90 of a cleaning agent application assembly in relation to a strip of cleaning fabric 13), the controller would cause the cleaning agent application assembly to move from left to right and back across the width of the strip of cleaning fabric 13. This may create non-contiguous diagonal stripes such as shown in FIG. 2C. This is achieved by only having the cleaning agent application assembly in contact and applying highly viscous cleaning agent 20 only as the assembly moves in one direction. Alternatively, if the cleaning agent application assembly is always kept in contact and applying cleaning agent to the strip of cleaning fabric 13, then contiguous diagonal stripes, such as those shown in FIG. 2F, may be created.

[0061] A fabric plater or cylinder cleaning means is used to bring the strip of cleaning fabric 13 in contact with a cylinder 100 to be cleaned and cause the cylinder 100 to be cleaned. Examples of cylinder cleaning means can be found in United States Patent No. 5 450 792 by Harold W. Gegenheimer et al entitled "AUTOMATIC CLEANING SYSTEM FOR PRESS ROLLERS AND CYLINDERS", and corresponding EP-A-0 590 833. United States Patent No. 4,867,064 issued September 19, 1989 to Akira Hara et al., entitled "APPARATUS FOR CLEANING A PRINTING CYLINDER", and United States Patent No. 5,150,653 issued September 29, 1992 to Akira Hara entitled "METHOD OF AND APPARATUS FOR CLEANING A CYLINDER". Additionally, any of the above described cylinder cleaning devices can be used with cleaning fabric supply roll 10 which is applied with a highly viscous cleaning agent 20 not on a printing press, such as, but not limited to, when the assemblies shown in FIGS. 4 and 5 are used.

[0062] After being used to clean cylinder 100, the used portion of the strip of cleaning fabric 13 is taken up by a take-up means 110. Preferably, take-up means 110 is a take-up shaft 112 rotatably mounted to mounting assembly 80. A take-up roll is formed by winding the used strip of cleaning fabric 13 around the take-up shaft 112. Examples of take-up shaft 72 can be found in a patent application filed by applicant C. Robert Gasparini on May 1, 1995 entitled "MOUNTING MECHANISMS FOR CLOTH ROLLS ON PRESS CYLINDER CLEANING DEVICES" and in a corresponding EP-A-0741036.

[0063] A distinct advantage of the cleaning system of this invention is that it eliminates the need for complex apparatus, such as pumps, spray bars, manifold lines, valves and the like, especially as part of the automatic blanket cleaning systems used on printing machinery to introduce cleansing solvents or solutions to the cleaning fabric just prior to use.

[0064] In addition, the cleaning system of this invention provides numerous other advantages. For example,

it is relatively simple in construction, employs readily available materials, and can be made in a relatively simple and forward manner without resort to highly complex and expensive procedures which necessitate the use of

laborate machinery. Additionally, the invention is preferable to the invention discussed in U.S. Patent No. 5,368,157 to Gasparrini et al. in that it provides for less solvent displacement during storage and thus less of a change in the fabric roll's center of gravity. Numerous other advantages of this invention will be readily apparent to those skilled in the art.

[0065] It will remain understood by those skilled in the art that the present invention in its broader aspects is not limited to the particular embodiments shown and described herein, and that variations may be made which are within the scope of the accompanying claims.

[0066] — From the foregoing, it will be understood that an advantage of the invention is that it provides a new and improved method for obtaining a strip of cleaning fabric which is functional for cleaning the cylinders of printing presses which allows transportation of the strip of cleaning fabric to the press without substantially disturbing the placement of the cleaning agent on the cleaning fabric and detrimentally affecting the cleaning ability of the strip of cleaning fabric.

[0067] The foregoing specific advantages of the invention are illustrative of those which can be achieved by the present invention and are not intended to be exhaustive or limiting of the possible advantages which may be realised. Thus, these and other objects of the invention will be apparent from the description herein or can be learned from practising the invention, both as embodied herein or as modified in view of any variations which may be apparent to those of ordinary skill in the art, the same being realised and attained by means of parts, constructions, instrumentations, methods and combinations pointed out in the claims.

#### Claims

1. A device for cleaning a cylinder (100) of a printing press comprising:
  - a center piece (11, 15);
  - a strip of cleaning fabric (13) wrapped around said center piece to form a cleaning fabric supply roll (10); characterised in that a highly viscous cleaning agent (20) is present on said cleaning fabric whereby said strip of cleaning fabric is functional for cleaning said cylinder of a printing press.
2. The device as claimed in claim 1 wherein said center piece (11, 15) is a hollow core (11).
3. The device as claimed in claim 1 wherein said center piece (11, 15) is a shaft (15).

4. The device as claimed in any preceding claim further comprising a bag (17) enclosing said cleaning fabric supply roll (10).

5. The device as claimed in any preceding claim wherein said highly viscous cleaning agent (20) is present on substantially all of one side of said strip of cleaning fabric (13).

10 6. The device as claimed in any one of claims 1 to 4 wherein said highly viscous cleaning agent (20) is present on said strip of cleaning fabric in stripes.

15 7. The device as claimed in claim 6 wherein said stripes are extended across the width of the strip of cleaning fabric (13).

20 8. The device as claimed in any one of claims 1 to 6 wherein said highly viscous cleaning agent (20) is present on said strip of cleaning fabric in diagonal stripes.

25 9. The device as claimed in any preceding claim wherein said highly viscous cleaning solvent (20) is a gel.

10 10. The device as claimed in any one of claims 1 to 8 wherein said highly viscous cleaning solvent (20) is a paste.

30 11. The device as claimed in any preceding claim wherein said strip of cleaning fabric (13) is a reduced air content fabric, the length of said reduced air content fabric being at least about 25% greater than the length of non-air reduced fabric having an equal diameter about said center piece.

35 12. The device as claimed in any preceding claim further comprising a means for positioning said strip of cleaning fabric (13) adjacent to said cylinder to be cleaned (100).

40 13. The device as claimed in any preceding claim further comprising a means for locating said fabric (13) adjacent to and operatively associated with said cylinder to be cleaned (100).

45 14. The device as claimed in any preceding claim further comprising a mounting means for mounting said central piece and said strip of a cleaning fabric (13) in a position to clean said cylinder while said fabric is in contact with and is fed past said cylinder.

50 15. A method of making a cleaning system comprising: wrapping a strip of cleaning fabric around a center piece (11, 15) to form a cleaning fabric supply roll, characterised in that prior to wrapping, a highly viscous cleaning agent is applied on the strip of

cleaning fabric so that said strip of cleaning fabric is functional for cleaning a cylinder of a printing press.

16. The method as claimed in claim 15 wherein said highly viscous cleaning agent (20) is a jel. 5

17. The method as claimed in claim 15 wherein said highly viscous cleaning agent (20) is a paste. 10

18. The method as claimed in any one of claims 15 to 17 wherein said center piece (11, 15) is a shaft (15). 15

19. The method as claimed in any one of claims 15 to 17 wherein said center piece (11, 15) is a core (11). 20

20. The method as claimed in any one of claims 15 to 19 further comprising the step of unwinding said strip of cleaning fabric (13) from a bulk roll (30) prior to the application step (50). 25

21. The method as claimed in any one of claims 15 to 20 wherein said highly viscous cleaning agent (20) is placed on substantially all of one side of said strip of cleaning fabric (13). 30

22. The method as claimed in any one of claims 15 to 21 wherein said highly viscous cleaning agent (20) is placed on said strip of cleaning fabric (13) in non-contiguous stripes. 35

23. The method as claimed in claim 22 wherein said stripes are placed substantially across the width of said strip of cleaning fabric (13). 40

24. The method as claimed in any one of claims 15 to 23 wherein said highly viscous cleaning agent (20) is placed on said strip of cleaning fabric (13) in substantially diagonal stripes. 45

25. The method as claimed in any one of claims 15 to 24 further comprising the step of disposing a sealable bag (17) around the cleaning fabric supply roll (10). 50

26. The method as claimed in any one of claims 15 to 25 further comprising the step of calendaring (40) said strip of cleaning fabric (13) prior to said application step (50). 55

27. A device (50) for applying a highly viscous cleaning agent (20) to a strip of cleaning fabric (13) comprising:

- a mounting assembly;
- a bulk roll (30) center piece coupled to said mounting assembly to allow rotational movement of said bulk roll center piece, said strip of

cleaning fabric (13) wound around said bulk roll center piece;

a hopper (52, 72) containing said highly viscous cleaning agent (20);

an applicator means (54, 74, 78) in contact with said strip of cleaning fabric and associated with said hopper to allow said cleaning agent to flow onto said applicator means; and

a cleaning fabric supply roll (10) center piece rotatably coupled to said mounting assembly, said strip of cleaning fabric with said highly viscous cleaning agent wound around said center piece.

15 28. The device as claimed in claim 27 further comprising calendaring means (40) for reducing the thickness and increasing the length of said strip (13) of cleaning fabric on said cleaning fabric supply roll (10) center piece without substantially increasing the diameter of said cleaning fabric supply roll. 20

29. The device as claimed in either claim 27 or 28 wherein said applicator means (54, 74, 78) means comprises at least a pair of rollers (76, 78) for applying said solvent to said strip of cleaning fabric. 25

30. The device as claimed in any one of claims 27 to 29 wherein said cleaning fabric supply roll center piece (11, 15) is a shaft (15). 30

31. The device as claimed in any one of claims 27 to 29 wherein said cleaning fabric supply roll center piece (11, 15) is a core (11). 35

32. The device as claimed in any one of claims 27 to 31 wherein said highly viscous cleaning agent (20) is a jel. 40

33. The device as claimed in any one of claims 27 to 31 wherein said highly viscous cleaning agent (20) is a paste. 45

34. The device as claimed in any one of claims 27 to 33 wherein said applicator means comprises at least one roller (78) in contact with said strip of cleaning fabric (13) and a means for storing (52, 72) said highly viscous cleaning agent and for dispensing said highly viscous agent to said at least one roller (78). 50

35. An assembly for use in a printing press cylinder cleaning system for cleaning a cylinder (100) of a printing press comprising:

- a cleaning fabric supply roll (10) comprising a strip of cleaning fabric (13) wrapped around a center piece (11, 15);
- a fabric placer operatively associated with said

strip of cleaning fabric to place said strip of cleaning fabric in contact with said cylinder; and characterised by:

a highly viscous cleaning agent (20);  
a hopper (52, 72) with a dispenser (54, 74, 78), said highly viscous cleaning agent stored in said hopper and dispensed through said dispenser;  
at least one roller (78) in contact with said strip of cleaning fabric and associated with said hopper to allow said highly viscous cleaning agent to flow through said dispenser and onto said at least one roller and onto said strip of cleaning fabric.

36. The assembly as claimed in claim 35 wherein said highly viscous cleaning agent (20) is a gel.

37. The assembly as claimed in claim 35 wherein said highly viscous cleaning agent (20) is a paste.

38. The device as claimed in any one of claims 27 to 34 further comprising controller means for controlling said applicator means (54, 74, 78) to apply said highly viscous cleaning agent (20) in noncontiguous stripes on said strip of cleaning fabric (13).

39. The device as claimed in claim 38 wherein said noncontiguous stripes extend substantially horizontally across at least a portion of the entire width of said strip of cleaning fabric (13).

40. The device as claimed in any one of claims 27 to 34 further comprising controller means for controlling said applicator means (54, 74, 78) to apply said highly viscous cleaning agent (20) in diagonal stripes on said strip of cleaning fabric (13).

41. The device as claimed in any one of claims 27 to 34 and 38 to 40 wherein said highly viscous cleaning agent is applied to substantially all of one side of said strip of cleaning fabric.

#### Patentansprüche

1. Vorrichtung zum Reinigen eines Zylinders (100) einer Druckpresse, mit

einem Mittelstück (11, 15),  
einem Streifen aus Reinigungsgewebe (13), der um das Mittelstück gewickelt ist, um eine Reinigungsgewebe-Vorratsrolle (10) zu bilden, dadurch gekennzeichnet, dass  
ein hochviskoses Reinigungsmittel (20) auf dem Reinigungsgewebe vorhanden ist, wodurch der Streifen aus Reinigungsgewebe funktionsfähig ist, den Zylinder inner Druck-

presse zu reinigen.

2. Vorrichtung nach Anspruch 1, bei der das Mittelstück (11, 15) ein hohler Kern (11) ist.

3. Vorrichtung nach Anspruch 1, bei der das Mittelstück (11, 15) eine Welle (15) ist.

4. Vorrichtung nach einem der vorhergehenden Ansprüche, weiterhin mit einem Beutel (17), der die Reinigungsgewebe-Vorratsrolle (10) umgibt.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der das hochviskose Reinigungsmittel (20) auf im wesentlichen der ganzen Seite des Streifens aus Reinigungsgewebe (13) vorhanden ist.

6. Vorrichtung nach einem der Ansprüche 1 bis 4, bei der das hochviskose Reinigungsmittel (20) in Streifen auf dem Streifen aus Reinigungsgewebe (13) vorhanden ist.

7. Vorrichtung nach Anspruch 6, bei der sich die Streifen quer über die Breite des Streifens aus Reinigungsgewebe (13) erstrecken.

8. Vorrichtung nach einem der Ansprüche 1 bis 6, bei der das hochviskose Reinigungsmittel (20) in diagonalen Streifen auf dem Streifen aus Reinigungsgewebe vorhanden ist.

9. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der das hochviskose Reinigungslösungsmittel (20) ein Gallert ist.

10. Vorrichtung nach einem der Ansprüche 1 bis 8, bei der das hochviskose Reinigungslösungsmittel (20) eine Paste ist.

11. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der der Streifen aus Reinigungsgewebe (13) ein Gewebe mit vermindertem Luftgehalt ist, wobei die Länge des Gewebes mit vermindertem Luftgehalt mindestens 25% größer als die Länge von nicht luftvermindertem Gewebe ist, das den gleichen Durchmesser um das Mittelstück herum hat.

12. Vorrichtung nach einem der vorhergehenden Ansprüche, weiterhin mit einer Einrichtung zum Positionieren des Streifens aus Reinigungsgewebe (13) angrenzend an den zu reinigenden Zylinder (100).

13. Vorrichtung nach einem der vorhergehenden Ansprüche, weiterhin mit einer Einrichtung zum Platzieren des Gewebes (13) angrenzend an den zu reinigenden Zylinder (100) und betriebsmäßig damit

verbunden.

14. Vorrichtung nach einem der vorhergehenden Ansprüche, weiterhin mit einer Befestigungs inrichtung zum Befestigen des Mittelstücks und des Str i-fens aus Reinigungsgewebe (13) in einer Position zum Reinigen des Zylinders, während das Gewebe ihn berührt und am Zylinder vorbei vorgeschoben wird.

15. Verfahren zur Herstellung eines Reinigungssystems, bei dem man einen Streifen aus Reinigungs gewebe um ein Mittelstück (11, 15) wickelt, um eine Reinigungsgewebe-Vorratsrolle (10) zu bilden, da durch gekennzeichnet, dass man vor dem Wickeln ein hochviskoses Reinigungsmittel auf den Streifen aus Reinigungsgewebe aufträgt, so dass der Streifen aus Reinigungsgewebe funktionsfähig ist, den Zylinder einer Druckpresse zu reinigen.

16. Verfahren nach Anspruch 15, bei dem das hochvis kose Reinigungsmittel (20) ein Gallert ist.

17. Verfahren nach Anspruch 15, bei dem das hochvis kose Reinigungsmittel (20) eine Paste ist.

18. Verfahren nach einem der Ansprüche 15 bis 17, bei dem das Mittelstück (11, 15) eine Welle (15) ist.

19. Verfahren nach einem der Ansprüche 15 bis 17, bei dem das Mittelstück (11, 15) ein Kern (11) ist.

20. Verfahren nach einem der Ansprüche 15 bis 19, bei dem man weiterhin vor dem Auftragen (50) den Streifen aus Reinigungsgewebe (13) von einer Massenrolle (30) abwickelt.

21. Verfahren nach einem der Ansprüche 15 bis 20, bei dem man das hochviskose Reinigungsmittel (20) auf im wesentlichen der ganzen einen Seite des Streifens aus Reinigungsgewebe (13) anbringt.

22. Verfahren nach einem der Ansprüche 15 bis 21, bei dem man das hochviskose Reinigungsmittel (20) in nicht aneinander grenzenden Streifen auf dem Streifen aus Reinigungsgewebe (13) anbringt.

23. Verfahren nach Anspruch 22, bei dem man die Streifen im wesentlichen quer über die Breite des Streifens aus Reinigungsgewebe (13) anbringt.

24. Verfahren nach einem der Ansprüche 15 bis 23, bei dem man das hochviskose Reinigungsmittel (20) in im wesentlichen diagonalen Streifen auf dem Streifen aus Reinigungsgewebe (13) anbringt.

25. Verfahren nach einem der Ansprüche 15 bis 24, bei dem man weiterhin einen verschließbaren Beutel (17) um die Reinigungsgewebe-Vorratsrolle (10) herum anordnet.

26. Verfahren nach einem der Ansprüche 15 bis 25, bei dem man weiterhin vor dem Auftragen (50) den Streifen aus Reinigungsgewebe (13) kalandert.

27. Vorrichtung (50) zum Auftragen eines hochvisko sen Reinigungsmittels (20) auf einen Streifen aus Reinigungsgewebe (13), mit einem Befestigungsaufbau, einem Mittelstück für eine Massenrolle (30), das mit dem Befestigungsaufbau verbunden ist, um eine Drehbewegung des Mittelstücks für die Massenrolle zu ermöglichen, wobei der Streifen aus Reinigungsgewebe (13) um das Mittelstück für die Massenrolle gewickelt ist, einem Behälter (52, 72), der das hochviskose Reinigungsmittel (20) enthält, einer Auftragseinrichtung (54, 74, 78), die den Streifen aus Reinigungsgewebe berührt und mit dem Behälter verbunden ist, damit das Re inigungsmittel auf die Auftragseinrichtung flie ßen kann, und einem Mittelstück für eine Reinigungsgewebe Vorratsrolle (10), das drehbar mit dem Befestigungsaufbau verbunden ist, wobei der Streifen aus Reinigungsgewebe mit dem hochviskosen Reinigungsmittel um das Mittelstück gewickelt ist.

28. Vorrichtung nach Anspruch 27, weiterhin mit einer Kalandereinrichtung (40) zum Vermindern der Dicke und Vergrößern der Länge des Streifens (13) aus Reinigungsgewebe auf dem Mittelstück für die Reinigungsgewebe-Vorratsrolle (10), ohne den Durchmesser der Reinigungsgewebe-Vorratsrolle wesentlich zu vergrößern.

29. Vorrichtung nach Anspruch 27 oder 28, bei der die Auftragseinrichtung (54, 74, 78) mindestens ein Paar Rollen (76, 78) zum Auftragen des Lösungsmittels auf den Streifen aus Reinigungsgewebe auf weist.

30. Vorrichtung nach einem der Ansprüche 27 bis 29, bei der das Mittelstück (11, 15) für die Reinigungs gewebe-Vorratsrolle eine Welle (15) ist.

31. Vorrichtung nach einem der Ansprüche 27 bis 29, bei der das Mittelstück (11, 15) für die Reinigungs gewebe-Vorratsrolle ein Kern (11) ist.

32. Vorrichtung nach einem der Ansprüche 27 bis 31, bei der das hochviskose Reinigungsmittel (20) ein Gallert ist.

33. Vorrichtung nach einem der Ansprüche 27 bis 31, bei der das hochviskose Reinigungsmittel (20) eine Paste ist.

34. Vorrichtung nach einem der Ansprüche 27 bis 33, bei der die Auftragseinrichtung wenigstens eine Rolle (78), die den Streifen aus Reinigungsgewebe (13) berührt, und eine Einrichtung zum Speichern (52, 72) des hochviskosen Reinigungsmittels und zum Ausgeben des hochviskosen Reinigungsmittels auf die mindestens eine Rolle (78) aufweist. 5

35. Aufbau zur Verwendung in einem Druckpressenzylinder-Reinigungssystem zum Reinigen eines Zylinders (100) einer Druckpresse, mit einer Reinigungsgewebe-Vorratsrolle (10), die einen Streifen aus Reinigungsgewebe (13) aufweist, der um ein Mittelstück (11, 15) gewickelt ist, einer Gewebeplatzierzvorrichtung, die betriebsmäßig mit dem Streifen aus Reinigungsgewebe verbunden ist, um den Streifen aus Reinigungsgewebe im Kontakt mit dem Zylinder zu platzieren, und gekennzeichnet durch ein hochviskoses Reinigungsmittel (20), einen Behälter (52, 72) mit einer Ausgabevorrichtung (54, 74, 78), wobei das hochviskose Reinigungsmittel in dem Behälter gespeichert und durch die Ausgabevorrichtung ausgegeben wird, mindestens einer Rolle (78), die den Streifen aus Reinigungsgewebe berührt und mit dem Behälter verbunden ist, damit das hochviskose Reinigungsmittel durch die Ausgabevorrichtung und auf die mindestens eine Rolle und auf den Streifen aus Reinigungsgewebe fließen kann. 15

36. Aufbau nach Anspruch 35, bei dem das hochviskose Reinigungsmittel (20) ein Gallert ist. 40

37. Aufbau nach Anspruch 35, bei dem das hochviskose Reinigungsmittel (20) eine Paste ist.

38. Vorrichtung nach einem der Ansprüche 27 bis 34, weiterhin mit einer Steuereinrichtung zum Steuern der Auftragseinrichtung (54, 74, 78), das hochviskose Reinigungsmittel (20) in nicht aneinander grenzenden Streifen auf den Streifen aus Reinigungsgewebe (13) aufzutragen. 45

39. Vorrichtung nach Anspruch 38, bei der sich die nicht aneinander grenzenden Streifen im wesentlichen horizontal quer über mindestens einen Teil der gesamten Breite des Streifens aus Reinigungsgewebe (13) erstrecken.

40. Vorrichtung nach einem der Ansprüche 27 bis 34, weiterhin mit einer Steuereinrichtung zum Steuern der Auftragseinrichtung (54, 74, 78), das hochviskose Reinigungsmittel (20) in diagonalen Streifen auf den Streifen aus Reinigungsgewebe (13) aufzutragen. 5

41. Vorrichtung nach einem der Ansprüche 27 bis 34 und 38 bis 40, bei der das hochviskose Reinigungsmittel im wesentlichen auf die ganze eine Seite des Streifens aus Reinigungsgewebe aufgetragen wird. 10

### Revendications

1. Dispositif pour nettoyer un cylindre (100) d'une presse à imprimer comprenant :  
une pièce centrale (11, 15) ;  
une bande de tissu de nettoyage (13) enroulée autour de ladite pièce centrale pour former un rouleau de distribution de tissu de nettoyage (10) ; caractérisé en ce que un agent de nettoyage très visqueux (20) est présent sur ledit tissu de nettoyage de manière que ladite bande de tissu de nettoyage soit adaptée à nettoyer ledit cylindre d'une presse à imprimer. 20
2. Dispositif selon la revendication 1, dans lequel ladite pièce centrale (11, 15) est un mandrin creux (11). 30
3. Dispositif selon la revendication 1, dans lequel ladite pièce centrale (11, 15) est un arbre (15). 35
4. Dispositif selon l'une quelconque des revendications précédentes, comprenant également un sac (17) enfermant ledit rouleau de distribution de tissu de nettoyage (10). 40
5. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ledit agent de nettoyage très visqueux (20) est présent sur pratiquement la totalité d'une face de ladite bande de tissu de nettoyage (13). 45
6. Dispositif selon l'une quelconque des revendications 1 à 4, dans lequel ledit agent de nettoyage très visqueux (20) est présent sur ladite bande de tissu de nettoyage sous la forme de rayures. 50
7. Dispositif selon la revendication 6, dans lequel lesdites rayures s'étendent transversalement à la largeur de la bande de tissu de nettoyage (13). 55
8. Dispositif selon l'une quelconque des revendications 1 à 6, dans lequel ledit agent de nettoyage très

visqueux (20) est présent sur ladite bande de tissu de nettoyage sous la forme de rayures en diagonale.

9. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ledit solvant de nettoyage très visqueux (20) est une gelée.

10. Dispositif selon l'une quelconque des revendications 1 à 8, dans lequel ledit solvant de nettoyage très visqueux (20) est une pâte.

11. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ladite bande de tissu de nettoyage (13) est un tissu à teneur en air réduite, la longueur dudit tissu à teneur en air réduite étant au moins d'environ 25% supérieure à la longueur de tissu sans réduction d'air ayant un diamètre égal autour de ladite pièce centrale.

12. Dispositif selon l'une quelconque des revendications précédentes, comprenant également un moyen pour positionner ladite bande de tissu de nettoyage (13) adjacente audit cylindre à nettoyer (100).

13. Dispositif selon l'une quelconque des revendications précédentes, comprenant également un moyen pour placer ledit tissu (13) adjacent à, et fonctionnellement associé avec, ledit cylindre à nettoyer (100).

14. Dispositif selon l'une quelconque des revendications précédentes, comprenant également un moyen de montage pour monter ladite pièce centrale et ladite bande de tissu de nettoyage (13) en une position pour nettoyer ledit cylindre tandis que ledit tissu est en contact avec, et est distribué au-delà de, ledit cylindre.

15. Procédé de fabrication d'un système de nettoyage comprenant les opérations consistant à :

enrouler une bande de tissu de nettoyage enroulée autour d'une pièce centrale (11, 15) pour former un rouleau de distribution de tissu de nettoyage, caractérisé en ce que, avant enroulement, un agent de nettoyage très visqueux est appliqué sur la bande de tissu de nettoyage de manière que ladite bande de tissu de nettoyage soit adaptée à nettoyer un cylindre d'une presse à imprimer.

16. Procédé selon la revendication 15, dans lequel ledit agent de nettoyage très visqueux (20) est une gelée.

17. Procédé selon la revendication 15, dans lequel ledit agent de nettoyage très visqueux (20) est une pâte.

18. Procédé selon l'un quelconque des revendications 15 à 17, dans lequel ladit pièce centrale (11, 15) est un arbre (15).

5 19. Procédé selon l'une quelconque des revendications 15 à 17, dans lequel ladit pièce centrale (11, 15) est un mandrin (11).

10 20. Procédé selon l'une quelconque des revendications 15 à 19, comprenant également l'opération consistant à dérouler ladite bande de tissu de nettoyage (13) d'un gros rouleau (30) avant l'opération d'application (50).

15 21. Procédé selon l'une quelconque des revendications 15 à 20, dans lequel ledit agent de nettoyage très visqueux (20) est placé sur pratiquement la totalité d'une face de ladite bande de tissu de nettoyage (13).

20 22. Procédé selon l'une quelconque des revendications 15 à 21, dans lequel ledit agent de nettoyage très visqueux (20) est placé sur ladite bande de tissu de nettoyage (13) sous la forme de rayures non continues.

25 23. Procédé selon la revendication 22, dans lequel lesdites rayures sont placées sensiblement transversalement à la largeur de ladite bande de tissu de nettoyage (13).

30 24. Procédé selon l'une quelconque des revendications 15 à 23, dans lequel ledit agent de nettoyage très visqueux (20) est placé sur ladite bande de tissu de nettoyage (13) sous la forme de rayures sensiblement en diagonale.

35 25. Procédé selon l'une quelconque des revendications 15 à 24, comprenant également l'opération consistant à disposer un sac pouvant être hermétiquement fermé (17) autour du rouleau de distribution de tissu de nettoyage (10).

40 26. Procédé selon l'une quelconque des revendications 15 à 25, comprenant également l'opération consistant à calandrer (40) ladite bande de tissu de nettoyage (13) avant ladite opération d'application (50).

45 27. Dispositif (50) pour appliquer un agent de nettoyage très visqueux (20) sur une bande de tissu de nettoyage (13) comprenant :

un ensemble de montage ;  
une pièce centrale de gros rouleau (30) couplée audit ensemble de montage pour permettre un mouvement de rotation de ladite pièce centrale dudit gros rouleau, ladit bande de tissu

de nettoyage (13) enroulée autour de ladite pièce centrale d'un gros rouleau ; une trémie (52, 72) contenant ledit agent de nettoyage très visqueux (20) ; un moyen applicateur (54, 74, 78) en contact avec ladite bande de tissu de nettoyage et associé à ladite trémie pour permettre audit agent de nettoyage de s'écouler sur ledit moyen applicateur ; et une pièce centrale de rouleau de distribution de tissu de nettoyage (10) couplée en rotation audit ensemble de montage, ladite bande de tissu de nettoyage avec ledit agent de nettoyage très visqueux enroulée autour de ladite pièce centrale.

**28.** Dispositif selon la revendication 27, comprenant également un moyen de calandrage (40) pour réduire l'épaisseur et accroître la longueur de ladite bande (13) de tissu de nettoyage sur ladite pièce centrale de rouleau de distribution de tissu de nettoyage (10) sans augmenter sensiblement le diamètre dudit rouleau de distribution de tissu de nettoyage.

**29.** Dispositif selon la revendication 27 ou 28, dans lequel ledit moyen applicateur (54, 74, 78) comprend au moins une paire de rouleaux (76, 78) pour appliquer ledit solvant sur ladite bande de tissu de nettoyage.

**30.** Dispositif selon l'une quelconque des revendications 27 à 29, dans lequel ladite pièce centrale (11, 15) de rouleau de distribution de tissu de nettoyage est un arbre (15).

**31.** Dispositif selon l'une quelconque des revendications 27 à 29, dans lequel ladite pièce centrale (11, 15) de rouleau de distribution de tissu de nettoyage est un mandrin (11).

**32.** Dispositif selon l'une quelconque des revendications 27 à 31, dans lequel ledit agent de nettoyage très visqueux (20) est une gelée.

**33.** Dispositif selon l'une quelconque des revendications 27 à 31, dans lequel ledit agent de nettoyage très visqueux (20) est une pâte.

**34.** Dispositif selon l'une quelconque des revendications 27 à 33, dans lequel ledit moyen applicateur comprend au moins un rouleau (78) en contact avec ladite bande de tissu de nettoyage (13) et un moyen pour stocker (52, 72) ledit agent de nettoyage très visqueux et pour distribuer ledit agent très visqueux audit au moins un rouleau (78).

**35.** Ensemble pour utilisation dans un système de nettoyage de cylindre de presse à imprimer pour nettoyer un cylindre (100) d'un presse à imprimer comprenant :

un rouleau de distribution de tissu de nettoyage (10) compris dans une bande de tissu de nettoyage (13) enroulée autour d'une pièce centrale (11, 15) ; un organe placeur fonctionnellement associé à ladite bande de tissu de nettoyage pour placer ladite bande de tissu de nettoyage en contact avec ledit cylindre ; et caractérisé par : un agent de nettoyage très visqueux (20) ; une trémie (52, 72) avec un distributeur (54, 74, 78), ledit agent de nettoyage très visqueux stocké dans ladite trémie et distribué par ledit distributeur ; au moins un rouleau (78) en contact avec ladite bande de tissu de nettoyage et associé à ladite trémie pour permettre audit agent de nettoyage très visqueux de s'écouler par ledit distributeur et sur ledit au moins un rouleau et sur ladite bande de tissu de nettoyage.

**36.** Ensemble selon la revendication 35, dans lequel ledit agent de nettoyage très visqueux (20) est une gelée.

**37.** Ensemble selon la revendication 35, dans lequel ledit agent de nettoyage très visqueux (20) est une pâte.

**38.** Dispositif selon l'une quelconque des revendications 27 à 34, comprenant également un contrôleur pour commander ledit moyen applicateur (54, 74, 78) pour qu'il applique ledit agent de nettoyage très visqueux (20) sous forme de rayures non contiguës sur ladite bande de tissu de nettoyage (13).

**39.** Dispositif selon la revendication 38, dans lequel lesdites rayures non contiguës s'étendent sensiblement horizontalement en travers d'au moins une portion de toute la largeur de ladite bande de tissu de nettoyage (13).

**40.** Dispositif selon l'une quelconque des revendications 27 à 34, comprenant également un contrôleur pour commander ledit moyen applicateur (54, 74, 78) pour qu'il applique ledit agent de nettoyage très visqueux (20) sous forme de rayures en diagonale sur ladite bande de tissu de nettoyage (13).

**41.** Dispositif selon l'une quelconque des revendications 27 à 34 et 38 à 40, dans lequel ledit agent de nettoyage très visqueux est appliqué sur pratiquement la totalité d'une face de ladite bande de tissu de nettoyage.

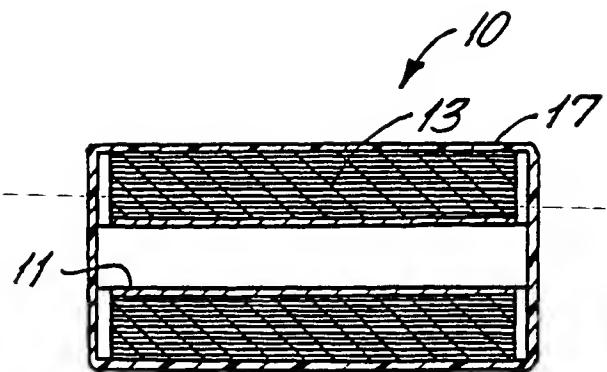


FIG. 1A

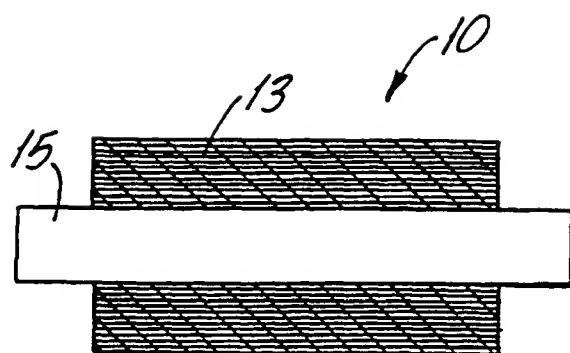
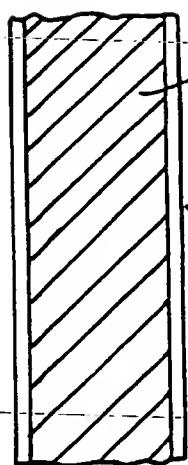
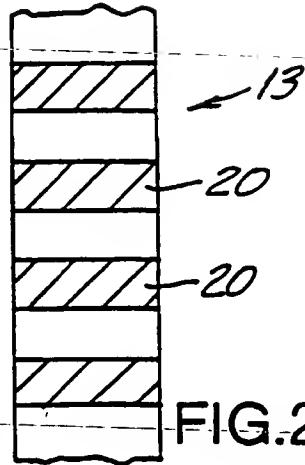


FIG. 1B



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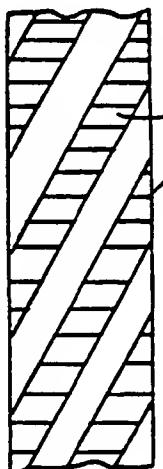
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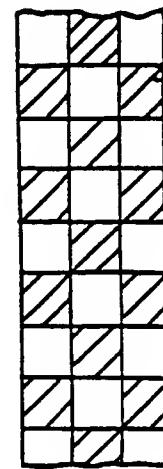
FIG. 2A

FIG. 2B



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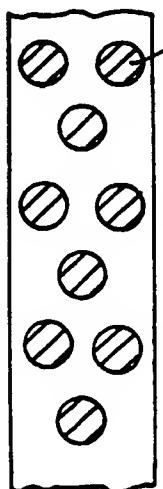


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13

FIG. 2C

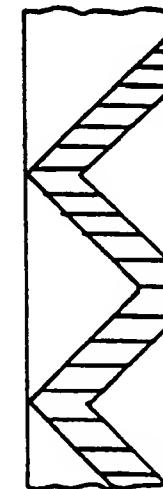
FIG. 2D



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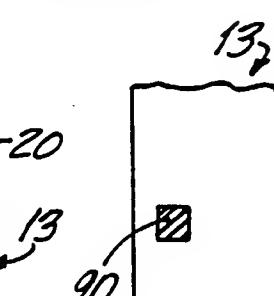
FIG. 2E



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FIG. 2F



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FIG. 8

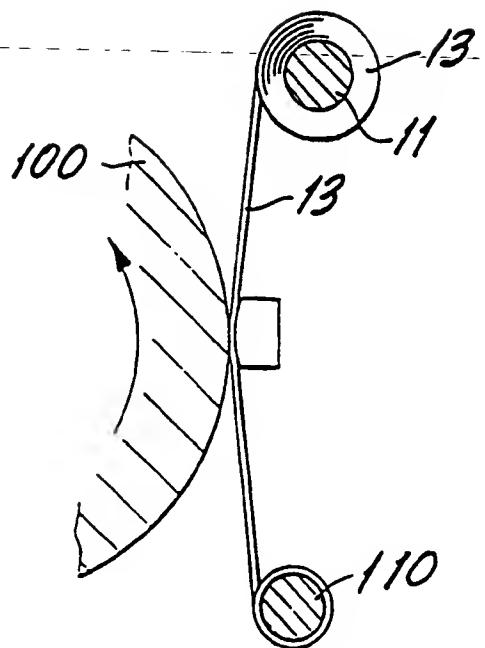


FIG.3

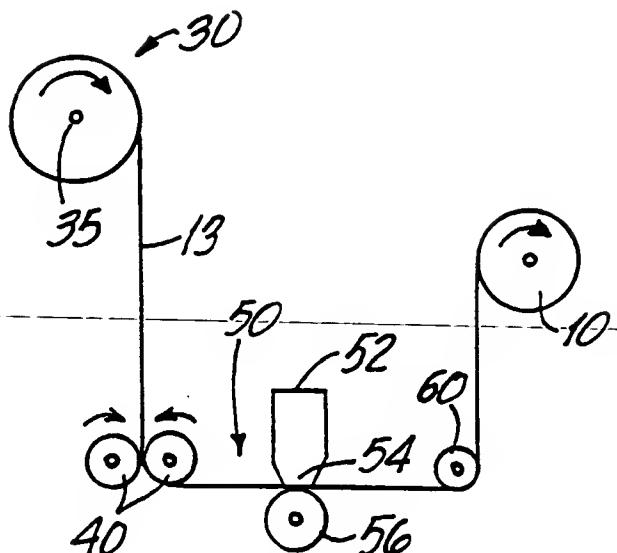


FIG.4

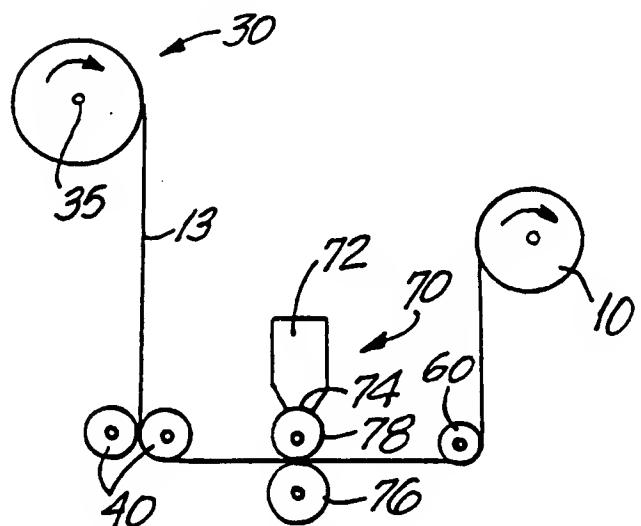


FIG.5

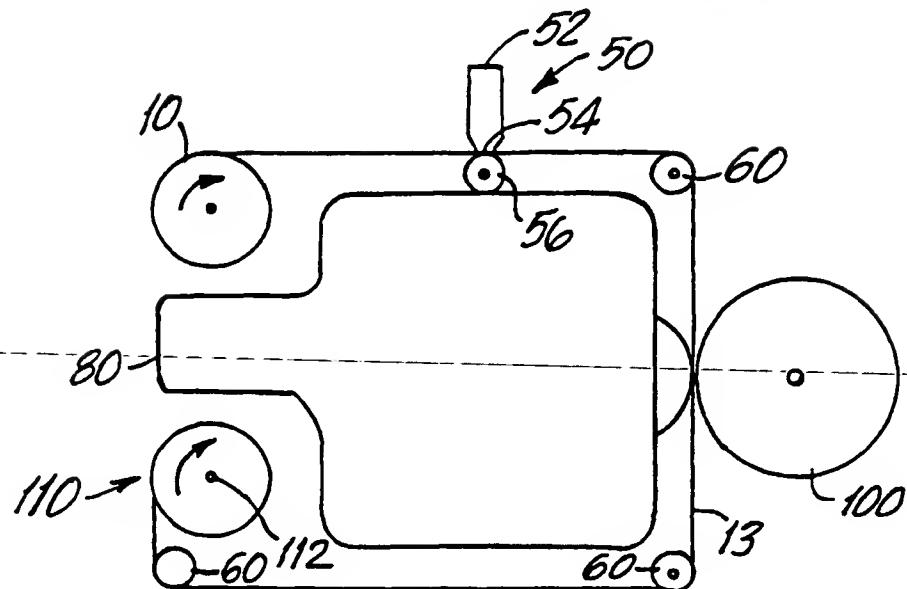


FIG. 6

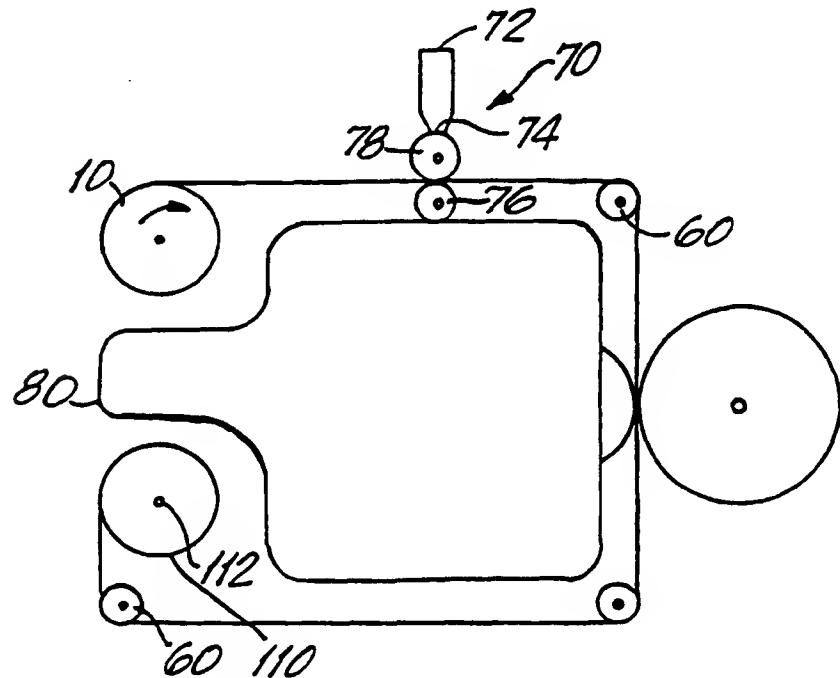
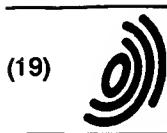


FIG. 7



(19)

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**(54) Cleaning system and process for making same employing reduced air cleaning fabric**

(57) A cleaning system for a printing press using pre-soaked, reduced volume of air in cleaning fabric. The system includes a cleaning fabric treated to reduce the amount of air volume the cleaning fabric contains. The cleaning fabric is saturated to functional equilibrium with a low volatility organic compound solvent. The cleaning fabric is wrapped around an elongated core to form a fabric roll. The saturated, wrapped fabric roll may be used to clean a cylinder of a printing press.

The saturated, wrapped fabric roll may be inserted in a sealable sleeve, the sealable sleeve being in contact with the fabric roll and then sealed, thus permitting transporting and storage of the system until use without detrimentally affecting the cleaning ability of the fabric.

A method for making the system is also disclosed.

EP 0 741 034 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.)
A	DE-A-39 07 612 (GRAFOTEC KOTTERER) * the whole document *	1,16,24	B41F35/00
A	EP-A-0 256 950 (KIMBERLEY-CLARK) * the whole document *	1,16	
P,X	WO-A-95-11584-(BALDWIN-GRAFIC-SYSTEMS) * the whole document *	1-32	
A	EP-A-0 348 609 (B-J TRADING)	-----	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	8 January 1997	Loncke, J	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			